CLAIMS

1. A reciprocating compressor comprising:

a driving unit having an outer stator and an inner stator disposed at a predetermined air gap therebetween, and a moving member positioned between the outer stator and the inner stator and linearly and reciprocally moved;

a compression unit having a cylinder fixed at an inner circumferential surface of the inner stator, and a piston connected to the moving member and linearly moved in the cylinder;

a support unit supporting the compression unit and the driving unit; and

a resonant spring unit positioned at a rear portion of the driving unit, installed at the support unit and inducing a resonant movement of the piston.

2. The compressor of claim 1, wherein the cylinder is fixed at the inner circumferential surface of the inner stator by a press-fit method or the like.

3. The compressor of claim 1, wherein the support unit comprises:

a first frame supporting an outer circumferential surface of the cylinder, one side surface of the outer stator, and one side surface of the inner stator;

a second frame supporting the other side surface of the outer stator; and

a third frame coupled with the second frame and receiving the resonant

spring unit.

4. The compressor of claim 3, wherein, in the first frame, an outer circumferential surface of the cylinder is fixed at the inner circumferential surface of the first frame by a press-fit method or the like, one side surface of the inner stator is supported at its inner side surface, and one side surface of the outer stator is supported at its outer side surface.

5. The compressor of claim 3, wherein the resonant spring unit comprising:

a spring support member mounted to a portion where the piston and the moving member are connected;

plural first resonant springs disposed between the second frame and one side surface of the spring support member; and

plural second resonant springs disposed between the third frame and the other side surface of the spring support member.

6. The compressor of claim 5, wherein the first resonant springs are arranged at a predetermined interval in a circumferential direction. and the second resonant springs are arranged between the first resonant springs respectively.

7. The compressor of claim 5, wherein the first resonant springs and the second resonant springs are disposed so as to overlap at a

predetermined section in an axial direction of the compressor

8. The compressor of claim 5, wherein the first and second springs are disposed to be parallel in the axial direction of the compressor.

9. The compressor of claim 5, wherein the first and the second resonant springs are formed of compression coil springs, and the first and the second resonant springs is mounted at spring support member so that an end portion of spring, a center of spring and a center of piston are arranged in line.

10. The compressor of claim 5, wherein the spring support member comprising:

a coupling portion coupled with a portion where the moving member and the piston are connected, and positioned at a rear portion of the piston;

a first support portion prolonged from the edge of the coupling portion at a predetermined interval in a circumferential direction and supporting the first resonant spring; and

a second support portion positioned between the first support portions and supporting the second resonant spring.

11. The compressor of claim 10, wherein the disc-shaped coupling portion has a passage through which a fluid passes, at its center portion, and fixed at portion where the piston and the moving member are connected.

12. The compressor of claim 10, wherein the first support portion is bent, rearwardly prolonged from the edge of the coupling portion, and formed so that its end portion is bent toward outside of the coupling portion to support the first resonant springs.

13. The compressor of claim 10, wherein the second support portion is radially prolonged from the edge of the coupling portion at a predetermined interval.

14. The compressor of claim 10, wherein the first support portion and the second support portion are alternatively formed in a circumferential direction of the coupling portion.

15. The compressor of claim 10, wherein spring sheet portions for fixing the first and the second resonant springs are formed at the first and the second support portions respectively.

16. The compressor of claim 15, wherein the spring seat portions respectively are formed as a cylindrical shape which is extended from respective sides of the first and second supporting portions, and the spring seat portions respectively have a hole formed therein.